

Pangolins under pressure

The armour that protects pangolins makes them acutely vulnerable to the deadliest predator of all. **James Fair** reports on the conservationists fighting to save these amazing mammals from *Homo sapiens*.

Photos by **Suzi Eszterhas**

This is a Sunda pangolin named Lucky. He was rescued from poachers and is now being rehabilitated at the Carnivore and Pangolin Conservation Program (CPCP) in Cuc Phuong National Park, Vietnam.

Wildlife photographer Suzi Eszterhas, whose images illustrate this feature, first came across a pangolin while photographing African wild dogs hunting at night in Botswana. As Suzi puts it, “Anything wild dogs come by, they mess with, and they messed with this pangolin.” But pangolins have a defence mechanism, rolling up into a ball to present an unappetising and impenetrable barrier of keratin scales to ward off hungry carnivores, like hedgehogs do with their spines. The dogs would have ripped the pangolin to shreds if they’d had the opportunity, but they soon lost interest.

Suzi didn’t, however, and she and her driver watched as the rather bizarre animal unfurled itself and trundled off into the night. “One of the things my driver did before we lost it disturbed me at first – he put his hand on it,” she recalls. “I said, ‘What are you doing?’ He told me that in the local culture it is good luck to touch a pangolin. He did it very gently.”

This pangolin had been lucky. While rolling up into a ball has largely served these strange, scaly, ant-and-termite-loving mammals well since they evolved roughly 80 million years ago, there is one fatal flaw in their strategy: it enables humans to carry them off to a cooking pot as easily as gathering wood for the fire.

DEADLY DEMAND

And not only for the pot. Despite the fact that they are made of keratin, the same substance as rhino horn and human hair, those scales – which have earned the pangolin unofficial sobriquets such as the ‘artichoke on legs’ and ‘walking pinecone’ – are highly sought after in many parts of both Africa and Asia for their purported benefits, which go beyond the merely medical to warding off evil spirits and conferring invisibility. It’s no wonder that the pangolin has been called “the most traded mammal on the planet”.

Suzi was lucky, too – most Africans and Asians don’t even know of the existence of the eight species of ►

PANGOLINS AROUND THE WORLD

There are eight species of pangolin, four in Africa and four in Asia. They have their differences – but all are under threat.

BLACK-BELLIED PANGOLIN
Phataginus tetradactyla
Occurs in forested regions of West and Central Africa, from Sierra Leone to Nigeria. Also in much of the Congo Basin and as far east as Uganda. The smallest (less than 1m long) and most arboreal pangolin. Hunted for its meat and for its scales.
STATUS *Vulnerable*

TEMMINCK'S GROUND PANGOLIN
Smutsia temminckii
Most widespread African pangolin, found from southern Chad, through East Africa to the Northern Cape province of South Africa. Inhabits savannah woodlands. Known as *bwana mganga* – 'the doctor' – in Tanzania because every body part is believed to have a medicinal use.
STATUS *Vulnerable*

GIANT GROUND PANGOLIN
Smutsia gigantea
The largest pangolin species, reaching 1.8m long and 35kg. Patchily distributed in forests through West and Central Africa as far east as western Kenya and Tanzania. Also exploited for its meat and scales, which are used in traditional African medicine.
STATUS *Vulnerable*

WHITE-BELLIED PANGOLIN
Phataginus tricuspis
A large range that extends from Guinea-Bissau in West Africa as far south as northern Zambia and as far east as Tanzania. Prefers lowland tropical forests, but there is evidence of it adapting to secondary forest and farmland areas. One study suggested it was most commonly found in African bushmeat markets.
STATUS *Vulnerable*

CHINESE PANGOLIN
Manis pentadactyla
Found from the Himalayan foothills of Nepal through China east to Taiwan and south to Laos and Vietnam. Comfortable in a wide variety of habitats, including tropical forest, bamboo forest and grassland. Heavy exploitation has removed it from much of its range.
STATUS *Critically Endangered*

PHILIPPINE PANGOLIN
Manis culionensis
Only recognised as being distinct from the Sunda pangolin in 1998, it has the most restricted range of any pangolin, being found almost exclusively on Palawan and some neighbouring islands. Exploited for its meat and scales – Taiwanese are reported to drink its blood in wine, while its skin is used to treat asthma.
STATUS *Endangered*

INDIAN PANGOLIN
Manis crassicaudata
The most westerly Asian pangolin, its range extends from Pakistan into India and Bangladesh and as far south as Sri Lanka. Poorly studied but believed to be found in a variety of habitats. Exploited for food and medicine, and hunted ritually by some tribes.
STATUS *Endangered*

SUNDA PANGOLIN
Manis javanica
Widely distributed from mainland South-east Asia down through Peninsular Malaysia and onto the Indonesia islands of Borneo, Java and Sumatra. Highest density found in primary rainforest, but also in degraded land, including palm-oil plantations. Extensive international trade from Indonesia to China and Vietnam.
STATUS *Critically Endangered*

pangolin, and they rarely get to see one. It doesn't help that all eight species are mainly nocturnal, cryptically coloured and extremely secretive; neither does the estimated removal of some one million animals from the wild over the past decade. As Carly Waterman, the pangolin technical specialist at the Zoological Society of London (ZSL), points out: "It's more individuals than the losses of elephants, tigers and rhinos combined."

But while this unprecedented level of commercial activity, mainly involving trade to Asian countries such as China and Vietnam, has been taking place, the pangolin has been poorly served by the conservation community.



Strong claws and a semi-prehensile tail make Sunda pangolins such as Lucky good climbers.

ALL EIGHT PANGOLIN SPECIES ARE MAINLY NOCTURNAL, CRYPTICALLY COLOURED AND EXTREMELY SECRETIVE.

Indeed until 2012 it was the only mammalian taxonomic group that didn't have its own specialist group under the auspices of the IUCN. In the words of Dan Challender, who researched the international trade in pangolins for his PhD, it had been "forgotten".

Now, at last, conservationists are fighting back. The arrival of the Pangolin Specialist Group – thanks to Dan and ZSL's Jonathan Baillie – has, in turn, led to the creation of three notable conservation projects in Cameroon, China and Thailand, all co-ordinated by ZSL. "That's half-a-million dollars that wouldn't have gone to pangolins three years ago," says Dan. The species' cause has also been taken up by the Duke of Cambridge's conservation programme United for Wildlife.

A LUCKY FIND

But when you talk to anyone who's anyone in the world of pangolins, one particular organisation crops up again and again – a small Vietnamese group called the Carnivore and Pangolin Conservation Program (CPCP), which specialises in caring for and releasing animals that have been confiscated from the illegal wildlife trade. Most of Suzi's photos were taken there, and many are of 'Lucky' who arrived at the centre in December 2006 and has remained there ever since.

"We hope to release Lucky one day, but right now we want to keep him and make him an ambassador for all



Research assistant Hsuan-Yi Lo with a three-month-old orphaned Chinese pangolin at Taipei Zoo, Taiwan.



This Chinese pangolin, pictured with her baby, was rescued from poachers and is now part of Taipei Zoo's captive-breeding programme.



Nguyen Van Thai of the CPCP holds a three-month-old Sunda pangolin.



Pangolins are often called scaly anteaters because they fill a similar niche – this is a Sunda pangolin.



Pangolin mothers carry their babies on their tail until they are weaned. This Chinese pangolin is just two weeks old.



ANATOMY OF A PANGOLIN

EARS

Special muscles enable the pangolin to close its ears and nostrils to protect them from insects.

MOUTH AND NOSE

A powerful sense of smell is the pangolin's main method of locating the ants and termites it mostly feeds on – other invertebrates may also be taken. The animal possesses a long, sticky tongue but no teeth. Digestion is aided by pebbles and spine-like protrusions in its stomach.

CLAWS

Three long curved claws on each front foot enable the pangolin to rip into the nests of ants and termites, and help arboreal species to climb trees.

SCALES

Most of the animal's head, body and tail are covered in horny, sharp and overlapping scales made of keratin – the exceptions are the sides of the face, the inner parts of the legs, the throat and the belly. Like hair, they carry on growing throughout the animal's life, though they are ground down when it digs and burrows in search of food.

TAIL

The species that are arboreal (white- and black-bellied, Indian, Philippine and Sunda pangolins) have semi-prehensile tails for climbing trees. Females use them to carry their young, too. The black-bellied pangolin's tail has 46 or 47 vertebrae – the most of any mammal.

GLANDS

Special glands near the anus secrete a pungent fluid that is used for both marking territory and defence.

Above right: a 12-day-old Chinese pangolin asleep in Taipei Zoo, Taiwan. Below: 'pangolin' comes from the Malayan word for 'the roller'.



pangolins," says the CPCP's driving force Nguyen Van Thai. "He's a very friendly pangolin, and we think that he can help raise awareness of the problems they face."

For the moment, Suzi points out, that's a small price to pay. Thanks to the use of natural vegetation, the centre has some of the best enclosures for captive animals that she's ever seen, and the staff regularly scour the surrounding forest to bring back ants' nests so that the residents get to eat as natural a diet as possible. "Lucky goes crazy over these ants," she says. "He seems to have fun doing what he would in the wild, and not just eating something out of a bowl."

Many of the pangolins – mainly Sunda pangolins *Manis javanica* – are rehabilitated into the wild, though officials frequently insist that confiscated animals are retained in captivity because they are evidence in criminal cases against wildlife traders.

However, Thai is trying to persuade the Vietnamese government to relax restrictions so that individuals can go back to the wild sooner rather than later.

According to Louise Fletcher, who co-ordinated releases for the CPCP from 2013 to 2014, the work is also important because it's one

A GREATER UNDERSTANDING OF THE SPECIES' BEHAVIOUR WILL HELP SCIENTISTS PLAN SUITABLE CONSERVATION STRATEGIES.

of the few places where individuals are monitored using radio tags. This shows whether the animals are surviving post-release, and therefore whether the criteria used to assess the suitability of the habitat are valid. During her time there, a total of five pangolins were released into Cát Tiên National Park, of which four are believed to have survived for more than six months.

"The pangolin that didn't survive kept returning to the same den site every night," she says, "which is unusual. Normally pangolins wander all night in search of ants and termites, then find somewhere to sleep when they stop. This one had lost a lot of weight [when they found it after it died], and perhaps its behaviour should have alerted us to the fact that it wasn't doing so well."

But this, as she points out, is valuable information about an animal that is hard to study and whose basic biology is poorly understood. Since leaving Vietnam, Louise has worked with a small conservation project in

Brunei, the tiny sovereign state on the island of Borneo, and is now raising funds to start a programme to train sniffer dogs that can find pangolins in the wild – which is after all how the poachers do it.

"Say you've got an area of forest that's under threat," Louise explains. "You could use the dogs to see whether there are pangolins and other species that might help to prevent that development from going ahead." It would also enable you to tag wild animals to further increase our understanding of their behaviour.

CAMERA SHY

Why not just use camera-traps, though, an efficient and relatively cheap technology that is trusted to monitor wildlife all over the world – as demonstrated by our wildcat article on p26? "We had one Sunda pangolin, which was tagged, and it had seven den sites and an area of about 2ha that we were aware of," Louise replies. "We put up 10 camera-traps in this 2ha area, and it still took us three months to get a photo of it. Bigger mammals need to use pathways, but pangolins just wander through the undergrowth, and until we understand them and their use of micro-habitats better, we can't place the cameras in the right locations."

A greater understanding of the species' behaviour will help scientists to plan suitable conservation strategies. But they also need a greater understanding of the human desire to exploit pangolins to the brink of extinction, ►

Wild Chinese pangolins in temperate areas spend the winter in burrows. Here mothers give birth, emerging with their baby the following spring – this one is in Taipei Zoo.





Above: the CPCP's Nguyen Van Thai examines a three-month-old Sunda pangolin rescued from poachers. Right: staff at the centre weigh another baby Sunda pangolin – in adults, scales represent about a quarter of the total body weight.



THERE IS NO EVIDENCE THAT THE PANGOLIN'S SCALES IMPROVE OUR HEALTH, BUT CLAIMS GET MORE OUTLANDISH BY THE YEAR.

and this is the issue that increasingly occupies Dan Challender's time. Once, during a visit to Ho Chi Minh City in Vietnam, he heard that pangolin was appearing on a local menu, so he visited the restaurant.

"This guy brought a pangolin into the dining area in a corn sack," Dan remembers. "It wasn't big, probably about 2kg, and it was rolled up in a ball." He killed the animal then and there before cooking and serving it to three diners, who paid £450 for the privilege.

Did Dan learn anything from witnessing such a gruesome sight? "I wanted to get an understanding of the demands and motivations of consumers, and perhaps use that to devise strategies to change their behaviour and stop them consuming pangolins," he says. "The fact that the animal was killed in front of the customers suggests to me that the chef wanted to confirm the authenticity of the meat – that it came from a wild pangolin. Vietnamese people have a long cultural attachment to the meat of wild animals, which makes this a complex issue to address."

MEDICAL MYTHS

Then there's the pangolin's dubious status as a walking medicine cabinet. This is, according to Carly Waterman, mainly an issue in China, and ZSL's Chinese project is looking at some of the motives there. As with rhino horn, there is no evidence that the scales have any impact on human health, but – as is also the case with rhino horn – the claims made on their behalf seem to become more outlandish by the year.

"Pangolin scales are already regarded as something that improves blood circulation, stimulates lactation and cures skin conditions," Carly says. "And recently one of my colleagues, who is Chinese, said that they were starting to be touted as a cure for breast cancer, which I hadn't heard before. There's no doubt that the threat has grown, and that's probably down to the expanding middle classes with their increased spending power."

Suzi Ezsterhas says that the world needs to care about pangolins, so that the people who live in the species' range states begin to value them too. Perhaps they could start by appreciating their role as providers of ecosystem services: a single pangolin is estimated to eat 70 million ants and termites every year. Failing that, what's not to love about an animal that resembles the flowerhead of a cultivated thistle or – depending on your point of view – the reproductive organ of an evergreen tree, and possesses a tongue that starts at its pelvis and, at full extension, is longer than its head and tail combined? 🦿

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Wildlife's environment editor.
He edits our Agenda and
Analysis pages every month
– see p51 for the latest news.

+ FIND OUT MORE

- IUCN Pangolin Specialist Group: www.pangolinsg.org
- See pangolins on video: www.discoverwildlife.com